(GGSM2004/Portugal)

Time-Variable Gravity from Satellite Laser-Ranging: The Low-Degree Components and Their Connections with Geophysical/Climatic Changes

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Satellite laser-ranging (SLR) has been observing the tiny variations in Earth's global gravity for over 2 decades. The oblateness of the Earth's gravity field, J2, has been observed to undergo a secular decrease of J2 due mainly to the post-glacial rebound of the mantle. Sometime around 1998 this trend reversed quite suddenly. This reversal persisted until 2001, at which point the atmosphere-corrected time series appears to have reversed yet again towards "normal". This anomaly signifies a large interannual change in global mass distribution. A number of possible causes have been considered, with oceanic mass redistribution as the leading candidate although other effects, such as glacial melting and core effects may be contributing. In fact, a strong correlation has been found between the J2 variability and the Pacific decadal oscillation. It is relatively more difficult to solve for corresponding signals in the shorter wavelength harmonics from the existing SLR-derived time variable gravity results, although it appears that geophysical fluid mass transport is being observed. For example, the recovered J3 time series shows remarkable agreement with NCEP-derived estimates of atmospheric gravity variations. Likewise, some of the non-zonal harmonic components have significant interannual signal that appears to be related to mass transport related to climatic effects such as El Nino Southern Oscillation. We will present recent updates on the J2 evolution, as well as a ~monthly time sequence of low-degree component "map" of the time-variable gravity complete through degree 4, and examine possible geophysical/climatic causes.

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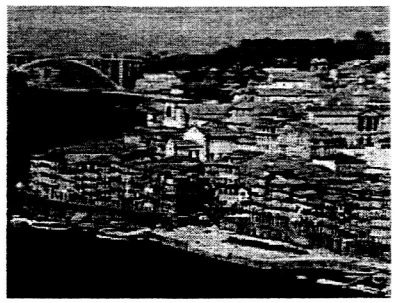

Porto, Portugal, from August 30th to September 3rd, 2004

Last Updated on 09-06-2004

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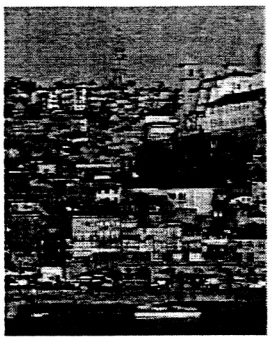
The "International Symposium on Gravity, Geoid and Space Missions" will be held in Porto, Portugal, from August 30th to September 3rd, 2004. The meeting will be hosted by the Faculty of Science, University of Porto.

The meeting aims to bring together scientists from different areas in the geosciences, working with gravity and geoid related problems, both from the theoretical and practical points of view. Integration of heterogeneous data and contributions from satellite and airborne techniques to the study of the temporal variations of the gravity field are some of the topics to be considered. Special focus will be given to the exploitation of data from the new Dedicated Gravity Satellite Missions. New space missions addressing topographic and ice field mapping using SAR, LIDAR, and laser altimetry are also of particular interest.

Presentation of student papers is especially encouraged. Best student papers awards will be made, consisting of financial support to attend the meeting.



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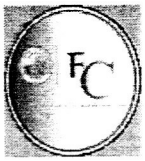
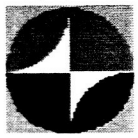
[Schedule]

Main topics will be:

1. Gravity field modeling from satellite missions
2. Airborne and Satellite gravimetry instrumentation
3. Regional geoid modeling
4. Radar and laser surface mapping from satellites
5. Topographic data bases and gravity modeling
6. Satellite altimetry, oceanography, and the geoid
7. Terrestrial gravity instrumentation, networks, and geodynamics
8. Temporal gravity variations: modeling and measurements
9. Planetary gravity fields and models





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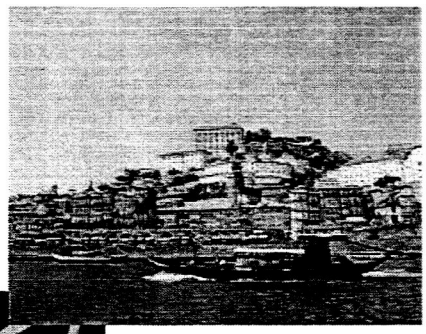
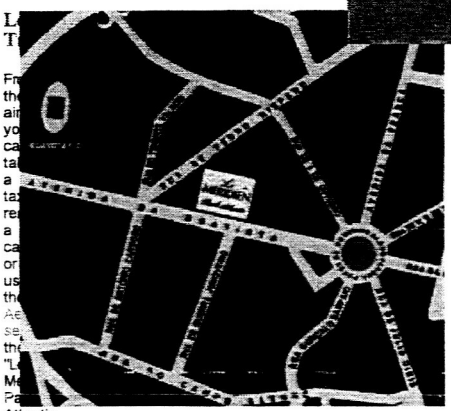
How to get to Porto



The city of Porto is easily accessible from abroad. Several airlines offer service to Francisco Sá Carneiro International Airport, (the largest airport in the Northeast of the Iberian Peninsula). It is located 11km from Oporto, and provides links to over 30 international destinations.

Meeting

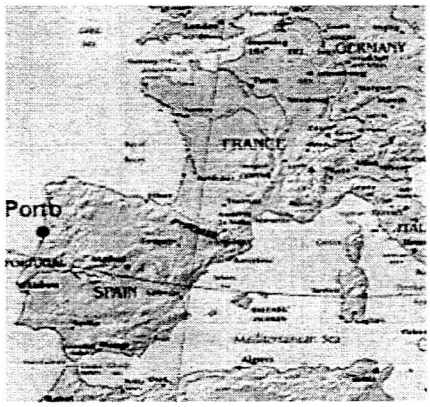
The Meeting will be hosted in "Le Meridien Park Atlantic Porto" (Hotel reservation information - available soon)



Atlantic
Porto" is only 20 minutes away.
The Aerobus service, just outside the airport terminal, runs every 30 minutes, all week, between 7 a.m. and 7 p.m.. Just ask the driver to leave you at "Le Meridien Park Atlantic Porto".
There are taxis available just outside the airport terminal.
If you drive from airport to Porto, take the IC1 motorway, follow the signs "Lisboa" to take IC23 ("Via de Cintura Interna - VCI") and take the exit "Boavista/Foz" (click here for more information).

If you arrive at Porto by train (Campanhã Railway Station) it is better to take a taxi (Taxi to the "Le Meridien Park Atlantic Porto" - 15 min).

If you drive from Lisbon to Porto, take the A1 motorway, follow the signs "ARRÁBIDA" to cross the Arrábida bridge and leave the motorway to "Bessa Leite" direction (click here for more information). The distance between the two cities is 310 Km.



[City Map] - [Weather Forecast]